Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

BULLETIN
OF THE
TORREY BOTANICAL CLUB.

Vol. 22. Lancaster, Pa., July 31, 1895. No. 7.

Some new and rare Desmids of the United States.—II.

By L. N. Johnson.

(Plates 232, 233.)

Since the publication of the first paper of this series[1] I have examined a number of collections of desmid-bearing material from various parts of the country. The results of this examination have been to extend very greatly the known range of many species, and to add more than a score to the number reported from the United States by previous writers. Many species are still undetermined and held for further study. Material is also being accumulated which will illustrate the great variability of many species, but this subject will be discussed at another time.

The present paper is based on collections made in New Hampshire, Connecticut, New York, North Carolina, Florida, Louisiana, Michigan, Kansas and California. From some of these States material representing several localities has been examined. I wish to acknowledge my indebtedness to the friends who have responded so kindly to my request for material, and to Prof. Nordstedt, who has aided me greatly by his criticism and advice.

I have thought it best to make one change in the manner of reporting additions to our flora. After every such species is given a number in parenthesis. This refers to a numbered specimen in my herbarium. Thus if any species is incorrectly determined it will be possible to see the particular specimen on which the report was based.

---

[1] Bulletin of Torrey Botanical Club, 21 : 285. Je. 1894.

The limits of genera among desmids are so unsettled that hardly any two writers agree in all points. Especially is this true of the genus *Cosmarium*. No attempt has been made to settle the points in dispute. In nearly every case the specimens have been compared with the original figures and descriptions. Where the variation from the type is slight varietal names have not been used, as it seems useless to encumber our literature with a long list of varieties, many of which represent simply forms of a variable species.

In the enumeration of species only the more noteworthy ones from the various localities are mentioned, although careful record has been made of all species observed, and specimens have been preserved. Species new to the United States are marked with an asterisk.

Pleurotaenium nodosum (Bail.) Lund. Near Tallahassee, Fla. Scarce. Surface of cell smooth; ends ornamented with a circle of conical-rounded granules.

Docidium verrucosum (Bail.) Ralfs. Frequent in various collections from Florida. Walle's figures do not give a correct idea of this beautiful species. The elevations are nearly square, except those of the terminal circle, which are elongated. The apex of the semi-cell bears a crown of rounded granules. The Florida specimens resemble the figures of Joshua's *D. tessellatum*[2], and it seems to me that the latter must be regarded as a synonym of *D. verrucosum.*

D. coronulatum Grün. Occasional at Meredith, N. H. Several cells were often found joined in series. Diam.$=25-35\ \mu$.

This is apparently the same species figured by Wolle under this name. Grünow's original measurements are larger, and the cells as figured by him were slightly different in shape.

Penium annulare West. Baton Rouge, La. Frequent. Found by W. West in material from Maine, and described by him[3]. The present discovery extends its range more than a thousand miles. My specimens agree with his description, except that the undulations are less numerous and the cells rather shorter. Diam.= 20 μ; length= 110 μ. Fig. 1.

---

[2] Joshua, W. Burmese Desmidieae, with descriptions of new species occurring in the neighborhood of Rangoon. Journ. Linn. Soc. 21 : 650. *pl. 25. f. 15.* Je. 1886.

[3] West, W. The Freshwater Algae of Maine. Repr. from Journal of Botany 1894: (2) *pl. 315. f. 5.6.* D. 1891.

* *P. Cylindrus* (Ehrb.) Breb. var. *Silesiacum* Kirch. (532). Wake Forest, N. C. Scarce. Agrees well with the description. Diam. = 14 μ; length=42 μ. Fig. 2.

Closterium maculatum Hast. Bridgeport, Conn. Rare. Nearly twice as large as Hastings' measurements, but otherwise agreeing with his description. Striae of minute granules and interrupted irregularly. Diam.= 50 μ. Prof. Nordstedt suggests that this species may possibly be a form of *Cl. areolatum* Wood. Fig. 7.

Cl. angustatum Kütz., var. *clavatum* Hast. Bridgeport, Conn. Scarce. Diam.= 25 μ. This seems well marked, but only a few specimens were found. Fig. 6.

* *Cl. abruptum* West. (395). Holderness, N. H. Frequent. Variable in length. Occasionally a specimen is longer than West's measurements. Diam.= 12 μ; length= 84–200 μ. Fig. 5.

* *Cl. Cynthia* De Not. (537). Wake Forest, N. C. Frequent and typical. Striae very fine and numerous. Diam.= 12–14 μ; length= 100–120 μ. Fig. 3.

Cl. tumidum nov. nom. (416). (*Cl. Cornu β* of Ralfs.[4]; Cl. cornu of Wille[5], but not of Ehrenberg[6]). Burlington, Kansas. Frequent. Diam. usually 12 μ; length= 116–120 μ. Occasionally a specimen reaches a diameter of 18–20 μ, representing Wille's forma *major*[5]. West found the latter in Maine. Fig. 4.

Gonatozygon aculeatum Hast. Meredith, N. H. Occasional. Seems to be a well-marked species. Diam.= 16 μ; length 300 μ. Aculeae 6–8 μ long. Fig. 9.

G. asperum (Breb.) Cleve. (460). Tallahassee, Fla. Rare. West reports it from Maine. The single specimen found was about twice as long as the type, but otherwise the same. Diam.= 6 μ; length= 260 μ. Fig. 8.

---

[4] Ralfs, J. British Desmids. 176. *pl. 30. f. 6 a and b.* 1848.

[5] Wille, N. Ferskvandsalger fra Novaja Semlya. Öfversigt af Kongl. Vetenskaps. Akademiens Forhandlingar, 1879, *pl. 14. f. 80, 81.* 1879.

[6] Ehrenberg, C. G. Die Infusionsthierchen als volkommene Organismen. 94. *pl. 6. f. 5.* 1838.

Micrasterias Nordstedtiana Wolle. Meredith, N. H. Rare. Diam.$=170\ \mu$. These specimens differ from Wolle's description and figures in that the lobes terminate in two spines instead of three or more. The end lobe is not so emarginate, and the projection on the sides of the neck is larger and nearly cylindrical, ending in two spines. Fig. 14.

M. Mahabuleshwarsensis Hobs. Meredith, N. H. Rare. In same material as the preceding. Rays more slender than in Wolle's figure.

* *Euastrum Sibiricum* Boldt (568). Duval county, Florida. Agrees well with Boldt's description and figures. Diam.$=18\mu$; length$=20\mu$; thick.$=11\mu$. It is interesting to find this Siberian species in Florida. Probably it will be found to have a wide distribution, escaping notice because of its small size. Fig. 13.

Dysphinctium viride (Corda) De Toni. (*Cosmarium Cordanum* (Breb.) Wolle.; Desmids of U. S. 1892 edition). Reported from Nova Scotia, and by West from Massachusetts. I find it common in material from Bridgeport, Conn., and Staten Island and Ithaca, N. Y. Diam.$=26\mu$.

Cosmarium amoenum Breb. Frequent in collections from Florida, and from Meredith, N. H. Typical.

C. cyclicum Lund. Meredith, N. H. The specimens come close to var. *subtruncatum* Hansg.

C. elegantissimum Lund. Duval county, Fla., and Meredith, N. H. The specimens resemble Lundell's figure [7], though the granules are most commonly only faintly emarginate. Wolle's figures are singularly incorrect in showing a deep linear sinus, though he describes it correctly in this particular. Usually about seven longitudinal rows of granules are visible at once in front view. Diam.$=22\mu$; length$=50\mu$. Fig. 27.

C. Minneapolitanum Hansg. (*C. protuberans* Lund. var. *granulatum* Wolle) (489). Ithaca, N. Y. Rather larger than Wolle's specimens (diam.$=34$–$36\ \mu$), but similar in form.

C. margaritatum (Lund.) Roy and Bissett (388). Meredith, N. H. Rare. The drawing does not show the granules well. They should be much larger and closer together. The position of the hyaline punctations is difficult to make out. They seem to be between the granules in the longitudinal rows. Diam.=72 μ; length =90 μ. Fig. 32.

---

[7] Lundell, P. M. De Desmidiaceis quae in Suaecia inventae sunt. 53. *pl. 3. f. 20.* 1871.

C. pseudoprotuberans Kirch. New Baltimore, Mich. Rare. Typical. Diam.=32 μ; length=36 μ; isth.=10 μ. West reports this from Maine. Fig. 24.

* *C. costatum* Nordst. (522.) Wake Forest, N. C. Scarce. Diam.=32 μ; length=42 μ; thick.=21 μ; isth.=12 μ. This bears some resemblance to *C. sub-speciosum* var. *validius* Nordst., but is much smaller and with less numerous and larger crenae on the margin. Fig. 31.

* *C. Gotlandicum* Wittr. Burlington, Kans. Occasional. Diam.=28 μ; length=36 μ; isth.=9μ. This may be the same as *C. rectangulare* Grun. (in Rab. Fl. Eur. Alg.), and in that case the latter name should prevail by the right of priority, but it seems to me that the identity of the two is not positively proven. This is reported as occurring in Nebraska[8]. Fig. 26.

* *C. granatum* Breb. var. *sub-granatum* Nordst. (341.) Ann Arbor, Mich. Occasional. Diam.=25 μ; length=36 μ; isth.= 8 μ. Fig. 16.

* *C. Paulense* (Börgesen). (*C. polymorphum* Nordst. subsp. *Paulense* Börgesen). 277. Duval Co., Fla. Scarce. At the suggestion of Prof. Nordstedt I raise this to specific rank, as it seems to differ sufficiently from *C. polymorphum* Nordst. Diam.=36 μ; length=50 μ; isth.=10 μ. Slightly smaller than Börgesen's specimens and differing slightly in the position of the granules, but seemingly not distinct. In very clear specimens one can see that the wall is hyaline punctate between the five large granules on the front. Fig. 17.

* *C. pericymatium* Nordst. (445). Ithaca, N. Y. Occasional. Differing from Nordstedt's figures[9] in its deeper constriction in side view, but otherwise the same. Diam.=28μ; length=50μ; thick=26μ; isth.=24μ. Fig. 28.

* *C. porrectum* Nordst. (360.) Burlington, Kans. Frequent.

---

[8] Contr. from Bot. Dept. of Univ. of Nebraska. New Series III. 46. 14 Je. 1892.

[9] Nordstedt, O. Desmidieae Arctoae. Öfvers. K. Vet. Akad. Forh. 1875: *pl. 7. f. 26.* 1875.

Slightly smaller than the original specimens from Brazil. Diam. =50 μ; length=50 μ; isth.=13 μ. Fig. 30.

* *C. quadrum* Lund. forma. (359.) Plymouth, N. H. Seems to be near var. *minus* Nordst. Semi-cells decidedly reniform at base; sometimes slightly retuse at the apex. Diam.=40 μ; length=44 μ; isth.=14 μ. Fig. 22.

* *C. Raciborskii* Lagerh. (365.) Meredith, N. H. Very rare. The membrane seems faintly granulate in the upper part of the semi-cell, but as the granules were not distinct they were not shown in the drawing. This agrees with the type in shape and surface, but differs slightly in the inner part of the sinus. Diam. =50 μ; length=44 μ; isth.=21 μ. Fig.20.

* *C. subspeciosum* var. *validius* Nordst. (433.) Whitmore Lake, Michigan. Occasional. Diam.=48 μ; length=62 μ; isth.=14 μ. Differs from the original description in having seven vertical rows of granules on the inflation and in the fact that they are in more or less definite horizontal rows also. This hardly seems sufficient ground for separating it as a new variety. Fig. 33.

*C. *synostegos* Schaarschm. (437). Bridgeport, Conn., and Sisson, Cal. Common but very minute. The specimens from Bridgeport average 10 μ in diameter, the others 8 μ with length=11 μ, thick=5 μ. The angles in the Californian specimens do not appear cuspidate. In most cases the sinus gapes little, if at all. This may prove to be a distinct species. Fig. 29.

*C. *tetragonum* Naeg. var. *Lundellii* Cke. (512). Ithaca, N. Y. Occasional. Diam.=24 μ; length=42 μ; th.=16 μ. Fig. 21.

*C. *Turpini* Breb. var. *podolicum* Gutw. (346). Baton Rouge, La. Slightly smaller than Gutwinski's measurements, but otherwise the same. Diam.=40 μ; length=46 μ; th.=26 μ isth.=12 μ. Fig. 18.

Staurastrum brachiatum Ralfs. Duval Co., Fla. Rare.

St. brevispinum Breb. Staten Island, N. Y., and Sisson, Cal. Frequent.

St. commutatum Kütz. (349). Duval Co., Fla. Rare.

St. grande Bulnh. Bridgeport, Conn., and Meredith, N. H. Diam.=68–78 μ.

St. trihedrale Wolle. Frequent in collections from Florida, also from Staten Island and Ithaca, N. Y. Diam.=28–30 μ.

Apex of semi-cell sometimes shows three slight elevations corresponding to the three lobes.

St. PROTRACTUM nov. nom. (*St. grallatorium* forma Wolle[10]) (428). This is certainly not a form of *St. grallatorium*. Wolle gives no note on it, but merely figures it. It may be described as follows: Length slightly less than breadth. Sinus shallow, linear, gaping widely in the outer half. Semicells nearly square with basal angles rounded and armed with two minute spines. Sides nearly parallel. Near the apex each is produced into a stout serrate ray tipped with three spines. Apex of semi-cell truncate, projecting above the rays and bearing several serrations. End view triangular, sides concave, angles drawn out into rays. Surface marked by several rows of serrations. Around the centre of the semi-cell (in end view) six larger bifid or trifid projections. Diam.=50–52 μ; length=44 μ. Whitmore Lake, Mich. Fig. 35.

* *St. leve* Ralfs. (450). Whitmore Lake, Mich. Frequent. Diam.=14 μ; length=18 μ. Fig. 34.

De Toni cites among the localities for this species "Americae borealis (Wolle),[11]" but I cannot find that Wolle ever reported it, and believe this must be a mistake.

* *St. Reinschii* Roy (348). Duval county, Fla. This does not agree exactly with Roy's description, but it comes so near it that I place it here provisionally. The spines are short but distinct. It is smaller than the type. Diam.=24 μ; length=20 μ. Fig. 15

* *Xanthidium antilopaeum* Kütz. forma *Javanicum* Nordst. (324). Ann Arbor, Mich. Diam.=52 μ; length=52 μ; thick.=30 μ; isth. =12 μ. The position and number of spines on the end of the semi-cell is variable, even in the same individual, but they show a tendency to arrangement in a single series. Fig. 10.

X. concinnum Arch. var. *Boldtianum* West. (422). (*Arthrodesmus hexagonus* forma Boldt.)[12] Duval county, Fla. Occasional. Very minute. Diam.=12 μ; length=14 μ; thick=6 μ; isth.= 4 μ. Nearly like Boldt.'s Fig. 17, but with sharper angles. In front view this looks like an Arthrodesmus, but in vertical view it shows a marked papilla on each side. It seems to be truly a *Xanthidium*.

---

[10] Wolle, F. Desmids of the United States. *pl. 57. f. 20.21.* 1892.

[11] De Toni, J. B. Sylloge Chlorophycearum omnium hucusque cognitarum. 1227. 1889.

[12] Boldt, R. Bidrag till Kännedomen om Sibiriens Chlorophyllophyceer. Öfvers. K. Vet. Akad. Förh. 1885: 109. *pl.* 5. *f. 17.* 1885.

X. Tylerianum West. (*X. antilopaeum* Kütz. var. *truncatum* Hast. Wolle in Desmids of the U. S. 1892 edition.) Ithaca, N. Y. Common and typical. Although first described by Hastings, West's name must take precedence, since Hastings published the species merely in a local newspaper.

The following species are believed to be new:

ARTHRODESMUS MICHIGANENSIS n. sp. Fig. 12.

Size medium. Length about one-third greater than breadth. Sinus gaping, broadly rounded, semi-cells being connected by a short neck. Semi-cells sub-elliptical, with the apex of the cell drawn out into a broad truncated lobe, and each end armed with a long slightly recurved spine. In vertical view rhombic elliptical with a long spine at each end. Side view circular. Diam.=24-30 μ; length=36-40 μ; thick=16-18 μ; isth.=7-9 μ. Whitmore Lake, Mich. Frequent. Type in herb. Johnson, 427.

COSMOCLADIUM TUMIDUM n. sp. Fig. 23.

Minute. Length and breadth nearly equal. Cells usually joined in fours by a hyaline, mostly unbranched filament. Greatest diameter of cell placed at right angles to the connecting filaments. Sinus deep, linear; semi-cells hexagonal elliptic, with apex flattened. In vertical view elliptical with slight but distinct median inflation. Side view nearly circular. Diam.=8 μ; length =9 μ; thick=5 μ; isth.=2 μ. Whitmore Lake, Mich. Type in herb. Johnson, 455.

This resembles *C. subramosum* Schmidle, but differs from it in its shorter cell, and in the median inflation of the semi-cell.

I do not feel perfectly sure that *Cosmocladium* should be separated from *Cosmarium*.

COSMARIUM PACIFICUM n. sp. Fig. 25.

Small. Length about one-fourth greater than the breadth. Sinus strongly gaping. Isthmus narrow. Semi-cells sub-elliptical. Sides curving regularly from the base to above the middle, then converging by a sharp angle to form the rounded end. End view elliptical, with no inflation. Side view nearly circular. A single pyrenoid in each semi-cell. Membrane punctate. Diam. =25-28 μ; length=32-34 μ; thick=15-17 μ; isth.=6 μ. Sisson, Siskiyou county, California. Altitude 3000 feet. M. A. Howe coll. Type in herb. Johnson, 402.

This resembles *Staurastrum bienianum* Rabh. var. *connectens* Boldt, but is much smaller, and lacks the short spines near the base of the semi-cells. It seems to be a true Cosmarium. It resembles *C. inflatum* Wolle, differing chiefly in length of cell and curvature of the sides. Wolle's figures are not always accurate, and it may be that this is a form of his species.

COSMARIUM DISPERSUM n. sp. Fig. 19.

Size, medium. Length and breadth about equal. Sinus deep, narrowly linear. Semi-cells semi-circular, with the apex sometimes slightly flattened. Margin gently undulate with about eighteen elevations, often less distinct toward the apex. End view elliptical; side view nearly circular. Two pyrenoids in each semi-cell. Membrane finely punctate. Diam.=40–44 μ; length=40 μ; thick.=20 μ; isth.=11 μ. Found in material from Baton Rouge, La., and from Meredith, N. H., at about the same time. Type (from Louisiana) in herb. Johnson, 347.

BOTANICAL LABORATORY, UNIV. OF MICHIGAN.

Description of Plates 232 and 233.

(Reduced one-fourth in Photographing.)

a=front view, *b*=vertical view, *c*=side view of cell.

1. *Penium annulare* West × 560.
2. *P. cylindrus* (Ehrb.) Breb., var. *Silesiacum* Kirch. × 750.
3. *Closterium Cynthia* De Not. × 560.
4. *C. tumidum* nov. nom. × 560.
5. *C. abruptum* West × 560.
6. *C. angustatum* Kütz., var. *clavatum* Hast. × 320.
7. *C. maculatum* Hast. × 320 (a semi-cell).
8. *Gonatozygon asperum* (Breb.) Cleve. × 320, *a* × 750.
9. *G. aculeatum* Hast. × 320.
10. *Xanthidium antilopaeum* Kütz. forma *Javanicum* Nordst. × 560.
11. *X. concinnum* Arch., var. *Boldtianum* West. × 750.
12. *Arthrodesmus Michiganensis*, n. sp. × 560.
13. *Euastrum Sibiricum* Boldt. × 750.
14. *Micrasterias Nordstediana* Wolle. × 320.
15. *Staurastum Reinschii* Roy. × 750.
16. *Cosmarium granatum* Breb., var. *subgranatum* Nordst. × 560.
17. *C. Paulense* (Börgesen). × 750.
18. *C. Turpini* Breb., var. *podolicum* Gutw. × 750.
19. *C. dispersum* n. sp. × 750.
20. *C. Raciborskii* Lagerh. × 750.
21. *C. tetragonum* Naeg., var. *Lundellii* Cke. × 750.
22. *C. quadrum* Lund. forma. × 750.

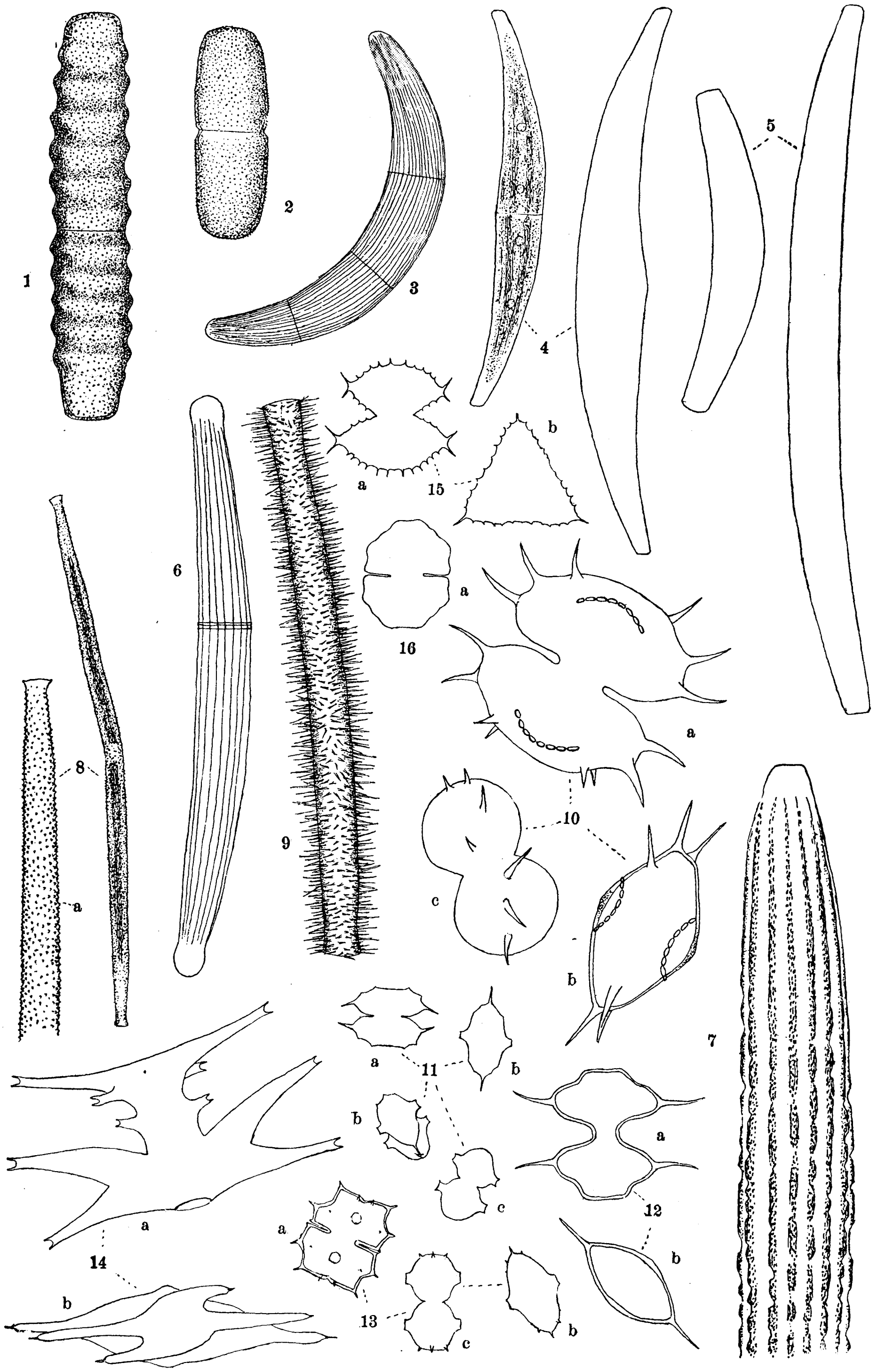
23. *Cosmocladium tumidum* n. sp. × 750.
24. *Cosmarium pseudoprotuberans* Kirch. × 750.
25. *C. Pacificum* n. sp. × 750.
26. *C. Gotlandicum* Wittr. × 750.
27. *C. elegantissimum* Lund. × 750.
28. *C. pericymatium* Nordst. × 750.
29. *C. synostegos* Schaarschm. × 750.
30. *C. porrectum* Nordst. × 560.
31. *C. costatum* Nordst. × 750.
32. *C. margaritatum* (Lund.) Roy and Bissett. × 560.
33. *C. subspeciosum* var. *validius* Nordst. × 750.
34. *Staurastrum leve* Ralfs. × 750.
35. *S. protractum* nov. nom. × 560.

The Genus Cenchrus in North America.

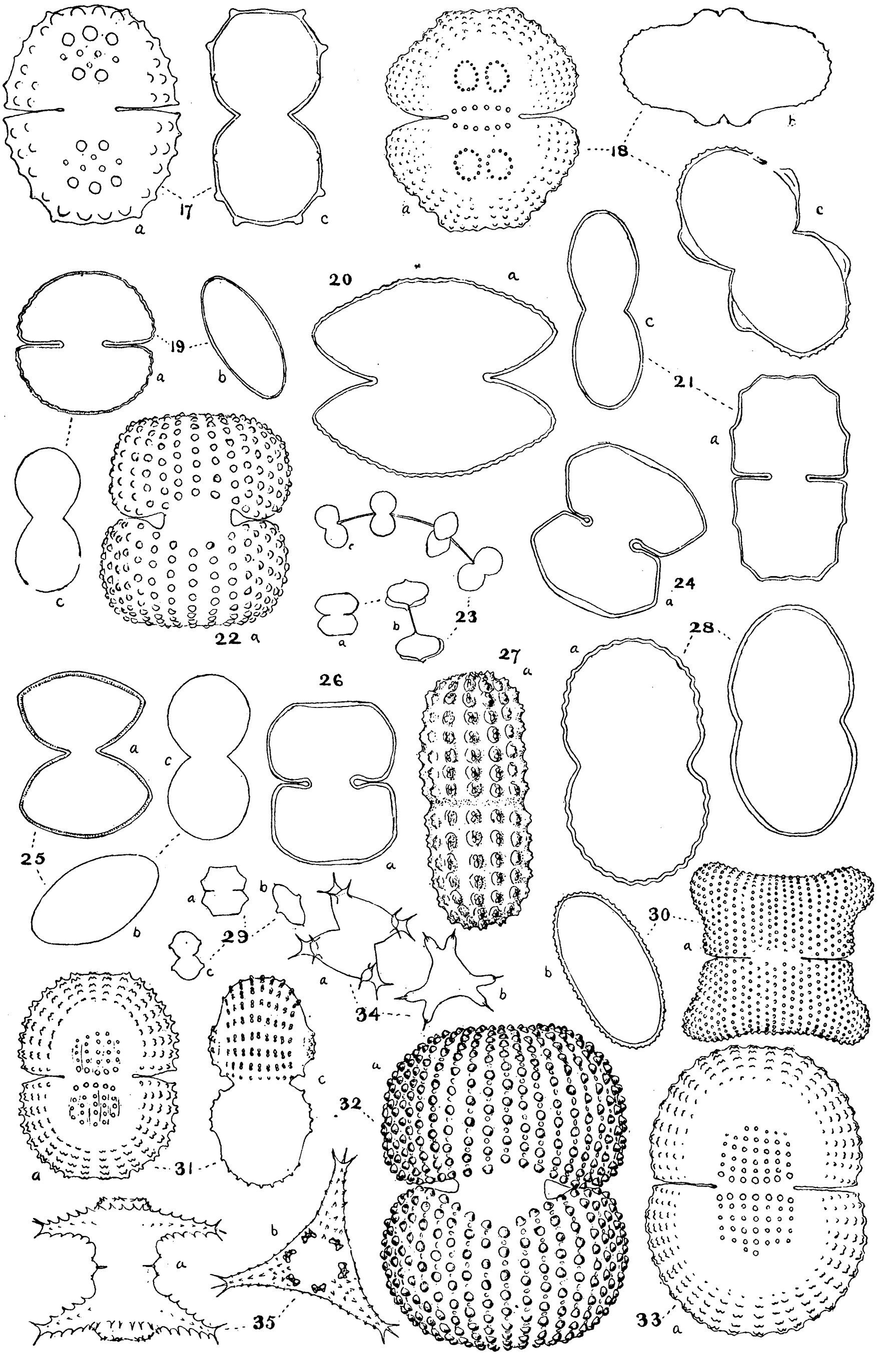
By Geo. V. Nash.

Cenchrus is a small genus of grasses containing about a dozen species, found principally in tropical and sub-tropical regions. In the United States it extends into the temperate zone. One species, *C. tribuloides*, the common bur-grass, occurs frequently in sandy soil along river banks, and has a very wide distribution, extending from Massachusetts to Ontario, Minnesota and Nebraska, south to Mexico. It is also found in South America and in Cuba. The other species occurring in the United States are confined to the southern parts of the country, one, *C. echinatus*, extending as far north as North Carolina.

The genus in the United States is readily divided into two well-marked groups, the first containing those forms in which the involucre consists of two spine-bearing valves, more or less concealing and enclosing the 2–6 spikelets, as illustrated in the common *C. tribuloides;* the second has only one species, the involucre consisting of 2–4 rows of erect bristles, the outer shorter than the inner, the single spikelet merely surrounded by the bristles and not enclosed. The single species belonging to this group is *C. myosuroides*, which ranges from Georgia and Florida to Texas, and south through Mexico to South America, where it is very common.



NEW AND RARE DESMIDS.



NEW AND RARE DESMIDS.